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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/066,168 | 04/24/1998 | MIKIO KATSUBE | 10089/4 | 8473 |

26646 7590 08/27/2002

KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

FORTUNA, ANA M

| ART UNIT | PAPER NUMBER |
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1723

DATE MAILED: 08/27/2002

27

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/066,168

Applicant(s)

Katsube et al.

Examiner

Ana Fortuna

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jun 4, 2002
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5, and 6 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The factual inquiries set forth in *Graham v. John Deer Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekino et al (4,293,419)(‘419) in view of Ethienne et al (5,380,433)(‘433), Bickson et al (5,160,042)(‘042), and Matsuura(Synthetic membrane and membrane separation process (page

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314).. Reference '419, of record, and discussed in previous office actions, disclose the double bundle hollow fiber membranes (elements 12 and 12', figures). Regarding claim 1, the feed tube (11, 11'), the connecting conduit (6), the container having the wall and end wall (2 and 2'), and the permeate discharge (10 and 10') is also disclosed. '419 fails to disclose the feed provided at on end of the container, and the retentate discharge proximal to the end of the container, however, discloses discharging the concentrate at the end of one of the modules, where the mayor solid accumulation is expected (elements 7 and 9). '419 fails to disclose feeding the module or positioning the feed entrance to the feed tube at the end walls of the housing. Reference '042 discloses hollow fiber membrane modules having the inlet to the central feed tube at the end of the container, e.g. axially to the central perforated pipe (element 10, figures 1 and 5). '419 also fails to disclose positioning the discharge for retentate substantially at the end of the container. Reference '042 also disclose positioning the retentate outlet (2) at any position of the container wall (column 8, lines 29-50, column 9, lines 31-36). Based on the teaching of '041, it would have been obvious to one skilled in the art at the time the invention was made to arrange the apparatus of '419, to open the feed and retentate out as suggested by reference '042. Reference '433 further teaches feeding a hollow fiber bundle axially through the central feed pipe, and collecting the residue or retentate through an outlet at the end of the container (elements 30 and 15), therefore, the positioning of the residue outlet at the end or substantially at the end of the housing is suggested by '433. '433 also discloses discharge for permeate through the container wall (element 38). Matsuura teaches housing for hollow fiber modules having the retentate discharge

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provided at one end of the housing and through the housing wall (Fig. 7.10 , page 314). It would have been obvious to one skilled in the art at the time the invention was made to modify a hollow fiber membrane module by providing the retentate discharge at the end of the module and in contact with the retentate space or space between the hollow fiber bundle and the inner wall of the housing or container, as suggested by Matsuura, or as suggested by Bickson, since Bickson suggest location at any position avoiding build up of pressure (column 8, lines 29-34). The build up of pressure is conventionally caused by solid accumulation in the housing.. The module of '433 will remove solids accumulated at the ed of the housing, since the outlet is in communication with the area near the end of the housing. As to claim 6, reference '419 teaches the inner liquid receiving plate (element 3, figure 1). It would have been also obvious to one skilled in the art at the time the invention was made to adjust the retentate discharge of the modules such that they can be used in conventional housings, as the housing disclosed by Matsuura.

Response to Arguments

3. Applicant's arguments filed 6/4/02 have been fully considered but they are not persuasive. Rejections drawings and claims objection and rejection under 112 have been overcome by the Amendment. The rejection over the prior art of record has been reviewed and is maintained. The argued language not suggested by the prior art and pointed out in applicant's response is supported by the prior art **structure**. Reference '419 teaches removing retentate at the end of at

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least one module, e.g. though exit 9, which avoids solid accumulation at the end of the particular module, e.g. module 11'. Reference '433 teaches the perforated feed fluid conduit (16), and teaches removing residue at the end of the module through exit 15 (Figure 1, and further suggest modifying the structure to remove residue or retentate through a lateral exit, placed substantially at the end and in contact with the outer surface of the elements (one or more bundles), and substantially proximal to one end of the container (Fig. 4, column 7, lines 24-27). Reference '042 teaches reversing the direction of the feed and non permeate, placing conduit 2 at any position with respect to the housing wall (in contact with the outside of the bundles) in a manner to avoid dead spaces, the position does not seem to be critical, however, consideration of formation of dead spaces (where accumulation of material or circulation of fluid is lacking). Additional prior art of record further shows the positioning of the residue or retentate discharge placed at the end of the module, in communication of the outside of the bundle space, or at the end of the housing just below the end cap (Cleremont et al, Yagihasshi et al, etc.). The invention is suggested by the combination of art discussed above. It would have been obvious to one skilled in the art at the time the invention was made to move the discharge of retentate in the module of '419 at the end of the housing, as suggested by '433., or further, since '433 discloses one or more bundles, it would have been further obvious to arrange the bundles of hollow fibers as suggested by '419, use the central conduit as feed conduit, and optionally closed the conduit at one end, as also suggested in '419,

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Conclusion

A limitation of the claimed combination which presented no novel or unexpected result over a similar feature used in the prior art references, and solve no stated problem, was held to be an obvious matter of design choice within the skill of the art. In re Kuble, 526 F2nd 523.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana Fortuna whose telephone number is (703) 308-3857. The examiner can normally be reached on Monday-Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached on (703) 308-0457. The fax phone number for the organization

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where this application or proceeding is assigned is (703) 872-9310 for regular responses, and
(703)872-9311 for after finals.

Ana Fortuna

August 25, 2002 .



ANA FORTUNA
PRIMARY EXAMINER